DATE

LIP

TO: 25X1

ROOM NO. BUILDING

REMARKS

Please note that the models you are now working on should be in accordance with paragraph 3 (a-e). The idea for the tuning tool is not particularly a good one. Would be better if trimmer had a knob so that a tool would not be required.

FROM: 25X1

11-22

~~SECRET~~ X5322234

Chief, Operations & Training Division, OC 20 October 1955

Chief, Engineering Division, OC

Transistorized Converter, CV-1

REF : (a) Memo from OC-O&T to OC-E dated 6 Sept. 1955
(b) [redacted] dated 9 August 1955 25X1

1. In response to your request contained in reference (a) the R&D Laboratory has designed a transistorized converter which meets the specifications stated in reference (b) in all important respects. This first model is attached along with operating instructions, photographs, schematic diagram and a spare battery. The nomenclature, CV-1 has been designated for this device.

2. During their recent TDY, [redacted] 25X1 discussed the proposed use of this converter with [redacted] personnel. 25X1 It was agreed at that time that since only one non-critical tuning control would be required on the unit, that the second crystal socket and switch for selecting alternate crystals could be eliminated. However, the model being forwarded to you still employs the dual crystal feature.

3. Paragraph 2 of reference (a) suggests that several additional models of the CV-1 be fabricated for possible future requirements. It is believed that three additional units can be made available by 1 January 1955. It is recommended that these additional units be fabricated with the following features changed in contrast with the features of the attached model:

a. Eliminate second crystal socket, switch and second RF trimmer.

b. [redacted] 25X1

c. Provide easier access to battery.

d. Provide terminals for external battery power such as locally available flashlight cells.

e. Provide tuning tool as integral part of converter.

DOCUMENT NO. _____
NO CHANGE IN CLASS. ☐
☐ DECLASSIFIED
CLASS. CHANGED TO: TS S ⓒ 2010
NEXT REVIEW DATE: _____
AUTH: HR 70-2
DATE: 3 DEC 1980 REVIEWER: 064540

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4. Fabrication of the additional units will commence as soon as your comments on the above recommendations are received.

25X1

Attachments:
1. Transistorized Converter
2. Operating Instructions & Photographs - Converter
3. Schematic - Converter
4. TR-120R Battery

R&D/Lab/DLH/bao (19 Oct. 1955)

Distribution:
Original & 1 - Addressee
1 - R&D Lab
1 - R&D Chrono (7 crystals attached)
1 - OC-E Chrono
1 - Dev/s

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ATTACHMENT #2

20 Oct 55

OPERATING NOTES AND INSTRUCTIONS

FOR THE CV-1 FREQUENCY CONVERTER

I. INTRODUCTION

1. The subject converter is intended for use in conjunction with a standard broadcast receiver to enable the user to receive signals in the range of 3.0 to 6.0 mc. The output is broadly tuned for an output frequency of approximately 1500 kilocycles. Except for the two crystals, this unit is self-contained and self-powered by its own internal battery. The crystals, which determine the signal frequencies, plug into sockets on the top face of the converter. The battery is a Mallory type TR-120R, 2.5 volt battery capable of powering the unit for well over 1000 hours of operation. The battery voltage is not critical and may vary over the range of 1.0 - 3.0 volts. Therefore, locally available batteries may be used if mounted externally and if proper polarity is observed. If the battery polarity is reversed the transistors will immediately be destroyed.

II. CHARACTERISTICS

1. The unit dimensions are 2" x 5-3/8" x 3/4" and it weighs approximately 10 oz. When used in conjunction with a typical AC-DC type home set of 100 microvolt sensitivity, the over-all sensitivity is approximately 8 microvolts. The ground connection is provided on the unit since the connection of the ground lead increases the sensitivity of the unit appreciably.

III. OPERATION

1. Choose a frequency between 1450 and 1550 kilocycles on which no local [redacted] is broadcasting in the area where the unit is to be used. This is the converter IF or output frequency. 25X1

2. For each of the two desired reception frequencies choose a crystal (with FT 243 holder) the frequency of which when combined with the converter IF frequency will equal the signal frequency. The frequencies of these crystals should be between 4.5 and 7.5 megacycles.

   Example: (a) Desired reception frequency, 3 mc. Choose converter output frequency in 1450 to 1550 kc range as indicated in paragraph 1 above. Choose an operating crystal of 3 mc plus the converter output frequency.

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III. OPERATION (Continued)

Example: (b) If desired reception frequency is 4.5 megacycles choose a crystal with a frequency of 4.5 plus 1.5 or 6.0 megacycles. Avoid operation wherein the oscillator frequency is the difference between the signal frequency and the IF frequency, because the oscillator is not reliable below approximately 3.1 mc.

3. (a) Plug the two crystals into the crystal sockets on top of the converter.

(b) With screw driver, align black dot of trimmer band 1 to approximate frequency of reception for this band. Align black dot of trimmer band 2 for approximate frequency of reception for this band.

(c) Connect output cable to broadcast receiver. Braid to ground terminal of receiver, wire to antenna.

(d) Connect antenna and ground to converter.

(e) Turn broadcast receiver on. Turn converter on.

(f) Place band switch of converter in position 1 and tune broadcast receiver for desired signal after which tune trimmer 1 for maximum signal strength.

(g) Repeat procedure outlined in (f) above for band 2.

(h) Throw converter switch to off when converter is not in use.